

It is possible to make the following conclusions on the basis of the shown force characteristics of M-M bond: a) the strength of Tc-Tc bond for all oxidation states is higher than for Mo-Mo bond, b) for the Tc complexes the D_{4h} symmetry (eclipsed geometry) is preferable, and only for $n=4$ the staggered geometry with D_{4d} symmetry becomes more advantageous, c) at varying of the Tc oxidation state, the change in bond strength does not exceed 20 %, whereas for the Mo complex the weakening of the force characteristics reaches 50 % and probably passes some threshold value, at which the existence of the complex becomes questionable. At the same time, for Tc cluster the same estimates still permit the state with $n=5$.

Table 2. The positions of minima for model potential curves and experimental M-M bondlengths (nm).

n	$[\text{Tc}_2\text{Cl}_8]^{n-}$			m	$[\text{Mo}_2\text{Cl}_8]^{m-}$	
	D_{4h}	D_{4d}	Experiment		D_{4h}	Experiment
2	0.2074	0.2061	0.2151 (D_{4h})	4	0.2245	0.214
3	0.2072	no minim.	0.2117 (D_{4h})	5	0.2236	no found
4	0.2090	0.2085	0.204 (D_{4d})			

One can see from Table 2, that the position of the calculated minimum is almost constant for different cluster charge. Thus, despite of adding electrons on antibonding levels in these clusters ($n>2$, $m>4$), the specific character of M-M bondlengths is likely to be defined by influence of an external crystal field on the characteristic charge distribution inside the cluster.

Basing on these results, it is possible to conclude, that the existing contemporary concepts about M-M bond strength based on geometric characteristics, as well as on formal multiplicity, are not unambiguous. Contradiction of these criteria was earlier found for the interpretation of M-M bond in $[\text{Tc}_2\text{Cl}_8]^{n-}$ cluster [1-4].

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